

Fuel Sprays in Hydrogen and Ammonia Combustion

**Position for a PhD Candidate at the
Institute of Fluid Mechanics and Heat Transfer
Graz University of Technology, in cooperation with
Heidelberg University and the Ruhr University Bochum (D)**

OPENING

The Institute of Fluid Mechanics and Heat Transfer (ISW) at Graz University of Technology, Prof. Dr. G. Brenn, the Institute of Scientific Computing (IWR) of Heidelberg University (D), Prof. Dr. E. Gutheil, and the Institute of Hybrid Additive Manufacturing (HAM) at the Ruhr University Bochum (D), Prof. Dr. J.T. Sehart, develop jointly a new combustor for various fuels, involving liquids as well as gaseous ammonia and hydrogen. The three-year project is financed by the German Research Foundation (DFG) and is a part of the special research programme SPP 2419 of the DFG in Germany. We announce the opening for the position of a PhD candidate at the ISW of Graz University of Technology.

THE RESEARCH PROJECT

Sustainable new technologies for energy conversion with combustion involve more and more carbon-free fuels. Candidates with particular importance are hydrogen and ammonia. It is the aim of modern combustion-based energy conversion technologies to employ combustors, which are flexible in terms of fuels as well as states of operation, and which ensure low pollutant emissions. In the present technical development, additive manufacturing is used for building the combustor body. The three research groups are experts in additive manufacturing (Bochum), in numerical simulations of reactive flows (Heidelberg), and in the efficient production and analysis of disperse multiphase flows (Graz). The group at the ISW of TU Graz investigates the ultrasonic atomization of liquid fuels for use with the combustor, both experimentally by phase-Doppler measurements in the sprays, and theoretically by a weakly non-linear stability analysis of liquid films on vibrating surfaces. The aim is to use the results both as an input for the numerical simulations in Heidelberg, and for optimizing the combustor design in Bochum.

REQUIREMENTS AND OPPORTUNITIES

We invite applications from graduates in Mechanical Engineering, Chemical Engineering, and Physics. We require sound knowledge in fluid mechanics and a good mathematical basis. Experience with experimental methods of fluid mechanics is welcome. We offer an international, interdisciplinary and professional environment of work at the institute, and an intense and professional supervision.

LANGUAGES: German, English, French.

EMPLOYMENT

The candidate will be employed as a project assistant at TU Graz. The salary is according to the Austrian Kollektivvertrag. There is the option for doing a PhD.

STARTING DATE: October 1, 2023

DURATION: 3 years

LOCATION: Institute of Fluid Mechanics and Heat Transfer, Graz University of Technology
(see contact information below)

CONTACT INFORMATION

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